

**WHAT IS CLAIMED IS:**

1. A treatment method comprising:  
administering to a patient having chronic myelogenous leukemia and a degree of resistance to imatinib mesylate, a therapeutically effective amount of a DNA methylation inhibitor which mitigates the imatinib mesylate resistance.
2. The method of claim 1, wherein the DNA methylation inhibitor is a cytidine analog.
3. The method of claim 2, wherein the cytidine analog is cytosine arabinoside.
4. The method of claim 2, wherein the cytidine analog is decitabine.
5. The method of claim 1, wherein is administered by a route selected from the group consisting of the DNA methylation inhibitor orally, parenterally, intraperitoneally, intravenously, intraarterially, transdermally, sublingually, intramuscularly, rectally, transbuccally, intranasally, liposomally, via inhalation, vaginally, intraocularly, via local delivery, subcutaneously, intraadiposally, intraarticularly, and intrathecally.
6. The method of claim 1, wherein the DNA methylation inhibitor is decitabine and is administered intravenously or subcutaneously.
7. The method of claim 6, wherein decitabine is administered to the patient via an intravenous infusion per day at a dose ranging from 1 to 100 mg/m<sup>2</sup>.
8. The method of claim 6, wherein decitabine is administered to the patient via an intravenous infusion per day at a dose ranging from 2 to 50 mg/m<sup>2</sup>.

1 9. The method of claim 6, wherein decitabine is administered to the patient via  
2 an intravenous infusion per day at a dose ranging from 5 to 20 mg/m<sup>2</sup>.

1 10. The method of claim 6, wherein decitabine is administered to the patient via  
2 an intravenous infusion per day for at least 3 days per treatment cycle at a dose  
3 ranging from 1 to 100 mg/m<sup>2</sup>.

1 11. The method of claim 6, wherein decitabine is administered to the patient via  
2 an intravenous infusion at a dose ranging from 5 to 20 mg/m<sup>2</sup> for 1 hour per day for  
3 5 consecutive days for 2 weeks per treatment cycle.

12. The method of claim 1, wherein the DNA methylation inhibitor is  
administered to the patient in blast phase of chronic myelogenous leukemia.

13. The method of claim 1, wherein the DNA methylation inhibitor is  
administered to the patient in chronic phase of chronic myelogenous leukemia.

14. The method of claim 1, wherein the DNA methylation inhibitor is  
administered to the patient in accelerated phase of chronic myelogenous leukemia.

1 15. The method of claim 1, wherein the patient has manifested resistance to  
2 imatinib mesylate within 6 months of the treatment with imatinib mesylate as  
3 defined by no improvement in the prognosis or worsening of the prognosis.

1 16. In a treatment method for a patient having chronic myelogenous leukemia  
2 and a degree of resistance to imatinib mesylate, the improvement comprising  
3 administering a therapeutically effective amount of a DNA methylation inhibitor  
4 which mitigates the imatinib mesylate resistance.

1 17. The method of claim 16, wherein the DNA methylation inhibitor is a cytidine  
2 analog.

1 18. The method of claim 17, wherein the cytidine analog is cytosine arabinoside.

1 19. The method of claim 17, wherein the cytidine analog is decitabine.

1 20. The method of claim 16, wherein imatinib mesylate is administered to the  
2 patient for a period of time prior to the administration of the DNA methylation  
3 inhibitor.

1 21. The method of claim 16, wherein imatinib mesylate is administered to the  
2 patient for a period of time after the administration of the DNA methylation  
3 inhibitor.

1 22. The method of claim 16, wherein the DNA methylation inhibitor is  
2 administered to the patient for a period of time prior to the administration of the  
3 imatinib mesylate.

1 23. The method of claim 16, wherein the DNA methylation inhibitor is  
2 administered to the patient for a period of time after the administration of the  
3 imatinib mesylate.

1 24. The method of claim 16, wherein the DNA methylation inhibitor is  
2 administered at the same time for at least a portion of the time that the imatinib  
3 mesylate is administered.

1 25. The method of claim 16, wherein is administered by a route selected from the  
2 group consisting of the DNA methylation inhibitor orally, parenterally,  
3 intraperitoneally, intravenously, intraarterially, transdermally, sublingually,

intramuscularly, rectally, transbuccally, intranasally, liposomally, via inhalation, vaginally, intraocularly, via local delivery, subcutaneously, intraadiposally, intraarticularly, and intrathecally.

26. The method of claim 16, wherein the DNA methylation inhibitor is decitabine and is administered intravenously or subcutaneously.

27. The method of claim 26, wherein decitabine is administered to the patient via an intravenous infusion per day at a dose ranging from 1 to 100 mg/m<sup>2</sup>.

28. The method of claim 26, wherein decitabine is administered to the patient via an intravenous infusion per day at a dose ranging from 2 to 50 mg/m<sup>2</sup>.

29. The method of claim 26, wherein decitabine is administered to the patient via an intravenous infusion per day at a dose ranging from 5 to 20 mg/m<sup>2</sup>.

30. The method of claim 26, wherein decitabine is administered to the patient via an intravenous infusion per day for at least 3 days per treatment cycle at a dose ranging from 1 to 100 mg/m<sup>2</sup>.

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31. A treatment method for treating a patient having chronic myelogenous leukemia, comprising:  
administering to the patient imatinib mesylate and decitabine such that the patient's resistance to imatinib mesylate in the absence of decitabine is reduced.

32. The method of claim 31, wherein imatinib mesylate is administered to the patient for a period of time prior to the administration of the decitabine.

33. The method of claim 31, wherein imatinib mesylate is administered to the patient for a period of time after the administration of the decitabine.

1 34. The method of claim 31, wherein decitabine is administered to the patient for  
2 a period of time prior to the administration of the imatinib mesylate.

1 35. The method of claim 31, wherein decitabine is administered to the patient for  
2 a period of time after the administration of the imatinib mesylate.

1 36. The method of claim 31, wherein decitabine is administered at the same time  
2 for at least a portion of the time that the imatinib mesylate is administered.

1 37. The method of claim 31, wherein imatinib mesylate is administered to the  
2 patient at a dose of 100-800 mg/day.

1 38. The method of claim 31, wherein the patient is in chronic phase of chronic  
2 myelogenous leukemia and imatinib mesylate is administered to the patient at a dose  
3 of 200-400 mg/day.

1 39. The method of claim 31, wherein the patient is in blast or accelerated phase  
2 of chronic myelogenous leukemia and imatinib mesylate is administered to the  
3 patient at a dose of 500-800 mg/day.

1 40. The method of claim 31, wherein decitabine is administered to the patient via  
2 an intravenous infusion per day at a dose ranging from 1 to 100 mg/m<sup>2</sup>.

1 41. The method of claim 31, wherein decitabine is administered to the patient via  
2 an intravenous infusion per day at a dose ranging from 2 to 50 mg/m<sup>2</sup>.

1 42. The method of claim 31, wherein decitabine is administered to the patient via  
2 an intravenous infusion per day at a dose ranging from 5 to 20 mg/m<sup>2</sup>.

1 43. A method for treating a patient having chronic myelogenous leukemia,  
2 comprising:

3 administering to a patient in blast phase of chronic myelogenous leukemia a  
4 therapeutically effective amount of a DNA methylation inhibitor in combination  
5 with imatinib mesylate.

1 44. The method of claim 43, where prior to administering, the patient's chronic  
2 myelogenous leukemia is staged.

1 45. The method of claim 44, wherein staging the patient having chronic  
2 myelogenous leukemia includes determining a number of blasts, promyelocytes,  
3 basophil, and platelets per liter of peripheral blood or bone marrow.

1 46. The method of claim 43, wherein administration is performed when the  
2 patient is in blast phase of chronic myelogenous leukemia and has more than 30%  
3 blasts in peripheral blood or bone marrow.

1 47. The method of claim 43, wherein the DNA methylation inhibitor is a cytidine  
2 analog.

1 48. The method of claim 47, wherein the cytidine analog is decitabine.

1 49. The method of claim 48, wherein decitabine is administered to the patient via  
2 an intravenous infusion per day at a dose ranging from 1 to 100 mg/m<sup>2</sup>.

1 50. The method of claim 49, wherein decitabine is administered to the patient via  
2 an intravenous infusion per day at a dose ranging from 2 to 50 mg/m<sup>2</sup>.

1 51. The method of claim 49, wherein decitabine is administered to the patient via  
2 an intravenous infusion per day at a dose ranging from 5 to 20 mg/m<sup>2</sup>.

1 52. A composition comprising:  
2 a DNA methylation inhibitor; and  
3 imatinib mesylate.

1 53. The composition of claim 52, wherein the DNA methylation inhibitor is a  
2 cytidine analog.

1 54. The composition of claim 52, wherein the DNA methylation inhibitor is  
2 cytosine arabinoside.

1 55. The composition of claim 52, wherein the DNA methylation inhibitor is  
2 decitabine.

1 56. The composition of claim 52, wherein the composition is formulated for  
2 intravenous or subcutaneous administration.

1 57. A treatment method comprising:  
2 administering to a patient having chronic myelogenous leukemia and  
3 manifesting intolerance to imatinib mesylate, a therapeutically effective amount of a  
4 DNA methylation inhibitor which mitigates the imatinib mesylate intolerance.

1 58. The method of claim 57, wherein the patient has already manifested  
2 intolerance to imatinib mesylate within 6 months of the treatment with imatinib  
3 mesylate as defined by manifesting a symptom selected from the group consisting of  
4 hepatotoxicity, fluid retention syndrome, neutropenia, hemorrhage, dyspepsia,  
5 dyspnea, diarrhea, muscle cramps, skin rash, fatigue, headache, nausea, vomiting,  
6 and thrombocytopenia.